

# Impact of health care on geriatric population and need for adult day care centers - a cross-sectional study of Kerala population

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## ABSTRACT

**Background:** According to the World Health Organization, proportion of the world's population over 60 years is expected to double from about 12% to 22% between 2015 and 2050. When compared to 42.34% increase in the working population in India, the increase in number of elderly was found to be higher at 54.77% in the past 15 years. Poor understanding of elderly life in India has led to a weak care and support system for them.

**Aims and Objectives:** The present study aims to find the feasibility of starting an Adult Day Care Center (ADC) in the study area, find the cost of hospitalization for the elderly and also the cost of starting an ADC by proposing an ideal model of an Adult Healthcare Center.

**Methods:** The study was conducted in Kanayannur taluk of Ernakulam district. Using simple random sampling, 398 elderly people above the age of 60 years were interviewed using a structured questionnaire to understand their morbidity issues and corresponding cost of care. Assessment of quality of life, disease burden and health-care expenditure and acceptance of ADC was done.

**Results:** The study included 205 (52%) males and 193 (48%) females. 60% of the elderly had single/double/triple illness. 46% of elderly people were keen to join the proposed ADCs. There was a significant correlation between cost of hospitalization and diabetes, hypertension, and high cholesterol levels.

**Conclusions:** The study clearly indicates the need for a comprehensive policy on geriatric patients in Kerala and the need for setting up dedicated ADCs.

**Key words:** Adult day care center, budget, disease burden, geriatric, operational cost

## INTRODUCTION

Population of elderly worldwide (people aged 60 years and above) has increased over the past two decades at a much faster pace. According to the World Health Organization, the proportion of the world's population over 60 years is expected to double from about 12% to 22% between 2015 and 2050.<sup>[1]</sup> Going by the worldwide trend, India will also certainly witness this demographic transition in coming years. When compared to 42.34% increase in the working population (15–59 years of age) in India, the increase in a number of elderly was found to be higher at 54.77% in the past 15 years.<sup>[2]</sup> Population reference bureau has predicted that the proportion of people aged more than 60 years will rise from 8% in 2010 to 19% in 2050 and the population of those aged 80 years and older will grow from 0.8% to 3%.<sup>[3]</sup> Poor understanding of elderly life in India has led to a weak care and support system for them. In the year 1999, National Policy on Older Persons was introduced in India with the aim to bring into light the priority domains for wellbeing of the elderly.<sup>[4]</sup> Thereafter in the year 2011, a National Program for Health Care of the elderly was formulated which focusses at developing geriatric care in India.<sup>[5]</sup> In this

context, "quality of life" which is related to enjoying happy life of high quality at old age, draws attention as a comprehensive and universal approach. Therefore, a lot of institutions which take care of elderly managed by Government, voluntary organizations, Christian missionaries have come into existence.

World's first Adult Day Care Center (ADC) was started in the year 1960 as a day program at a geriatric hospital in Greensboro, North Carolina.<sup>[6]</sup> ADCs are designed for older adults who can no longer manage independently or who are isolated and lonely. Nowadays, the most appropriate way to provide a socialization atmosphere for the marginalized and isolated old age people is to start an ADC. Furthermore, it has been found that individuals' perception of their own health, perceived ability to manage financially, the perception of poverty over time, and feelings of loneliness were found an important determinant of the quality of life of people aged 60 and more.<sup>[7]</sup> Quality of life and health care for elderly are upcoming issues in developing countries. The present study aims to find the feasibility of starting an ADC in the study area, find the cost of hospitalization for the elderly and also the cost of starting an ADC by proposing an ideal model of an Adult Healthcare Center.

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## MATERIALS AND METHODS

The study was carried out in Kanayannur Taluka, Ernakulam district of Kerala, India, which has a population of 7,90,212.<sup>[8]</sup> The study period was from April to August 2017.

Location-based Systematic Community Study using quantitative (survey) method was applied. Respondents of this study include male and female adults above the age of 60 years from Kanayannur taluk. Assessment of quality of life, disease burden, and health-care expenditure, and acceptance of ADC was done for the study. Apart from this, information on respondents perceived support from the family members or any other person was also collected. Except for all the major diseases which we had taken into account, rest of the responses were categorized under the term "Other diseases."

Simple random sampling was followed. Voice of customers was obtained from 398 adults using standardized questionnaire and direct interviews. Statistical analysis was done to find out whether there was any significant correlation between cost of hospitalization and the illnesses.  $P < 0.05$  was considered to be significant. SPSS was used to analyze the data and descriptive statistics.

The data used to design an ideal model of an ADC were obtained through literature search. Most of the ideas were adopted from Design Guidelines for Aged Care Facilities (Australia) and Manual of Policies and Procedures (State of California).<sup>[9,10]</sup> The adult care activities, services, staff requirements, physical layout, and equipment were designed, and cost estimation was done.

## RESULTS

Out of 398 elderly people included in the study majority (66%) of the people were in the age group 60–70 years followed by 27% in the age group of 70–80 years. 8% were in the age group of 80–90 years [Table 1]. The study included 205 (52%) males and 193 (48%) females. 60% of the elderlies had single/double/triple illness. 46% of elderly people were keen to join the proposed ADC however 54% of them did not show much interest in joining the center. Females (25.8%) showed more acceptability toward daycare than the males (20.35%). Although majority (70%) of the people were of the opinion that ADC was a good idea, only 38.5% of the total population was ready to pay for the proposed ADC system, and 61.5% were unwilling to pay.

A total of 90 elderly people were affected by hypertension, and the most common (54.4%) age group was 60–70 years. Females (53.3%) were more commonly affected than males (47.7%). 86% of them had incurred an average hospitalization cost between Rs. 30,000 and 100,000. A significant relation was found between cost of hospitalization and hypertension ( $P = 0.033$ ). Out of 398 people, 87 had diabetes, and it was seen more commonly (62.1%) in the age group of 60–70 years. Males (52.9%) were commonly affected than females (47.1%). 86.2% of them incurred an average cost of hospitalization between Rs. 10000 and 30000. There was a significant correlation between cost of hospitalization and diabetes ( $P = 0.041$ ). Serum cholesterol levels were found to be high in 42 out of 398 elderly population. Majority (64.3%) of them were in the 60–70 years age group. 60% of the females in the study sample had high cholesterol levels. 95.2% of the elderly in this group incurred cost of hospitalization between Rs. 5000 and 10000. A significant relation was found between high cholesterol levels and the cost

of hospitalization ( $P = 0.024$ ). Out of 398 elderly people studied, 51 of them were categorized as having "other diseases" which include thyroid diseases, arthritis, and asthma. It was seen more commonly in the age group 71–80 years (56.9%). 56.9% of males were affected as compared to 43.1% females. 64.7% of them incurred hospitalization cost between Rs. 30000 and 100000. There was a significant correlation between hospitalization cost and the category "other diseases" ( $P = 0.046$ ) [Table 2].

There were 184 (46%) elderlies who were interested in the idea of having an Adult Day Care in their locality. 97% of them were married and 85% of them had a living spouse. It was most acceptable in the age group of 60–70 years. Only 40% of these elderlies received pension on a regular basis. 91.8% of them had no other source of income. Domestic support was available to 48% of them. Out of these 184 elderlies, single, double, and triple illness were found in 33.15%, 22.28%, and 13.04%, respectively. 31.5% of them had no illness but were still keen to join ADC [Table 3].

50% of the elderlies were willing to contribute money in the range of 250–500 rupees per month and 27% of them in the range of 100–250 rupees per month [Figure 1].

## DISCUSSION

The present study was carried out in Kanayannur Taluka, Ernakulam district of Kerala, India. Majority (58%) of the people were in the age group 60–70 years. There were 205 (51%) males and 193 (49%) females. 54% of elderly people were keen to join the proposed ADC, and 43% were ready to pay for it. 70% of the people were in favor of ADC proposed system. Hypertension was found to be the most common illness in the group studied. 60–70 years age group was the most vulnerable group to have suffered from various illnesses. The hospitalization cost was higher in case of people suffering from hypertension and "other diseases" as compared to other illnesses. People suffering from high cholesterol levels had incurred least hospitalization cost than the rest. A statistically significant relation was found between cost of hospitalization and the various illnesses studied in the present study. According to data published in literature, the cost of hiring and maintaining a well-trained staff is commonly the single largest organizational expense.<sup>[11]</sup> According to the study by Bhan *et al.* poverty was a major barrier in accessing and affording healthy food as well as drugs in the elderly population. A unanimous suggestion was given by community and health-care providers that pension amounts should be increased to meet the cost of health care. However, administrators were of the opinion that delivery of existing social security schemes was ineffective and challenging.<sup>[12]</sup>

Total geriatric population in Kerala is the highest (12.6%) in India numbering 41,93,000 elderlies.<sup>[13]</sup> As per the study 1 ADC measuring 3000–4000 Sq.ft can provide services to 1265 elderlies at its maximum capacity. The state geriatric population would require a total of 3315 ADCs with a CapEx of Rs. 2486, 25,00,000/-

Operational cost of each ADC per month was calculated at Rs. 3,55,000/-. Annual operational cost for all ADCs in the state would require an amount of Rs.1412,19,00,000/-. The study indicates that 46% of our elderly population is willing to pay an amount of Rs. 407.25/- per month (Rs. 4887/- annually) as out of pocket expense for availing the services of ADC. As such the net annual revenue earned will be Rs. 9425947860/-. This will have an

**Table 1: Characteristics of geriatric population surveyed**

Characteristics	Number of females (%)	Number of males (%)	Total number of elderly (n)	Percentage of elderly (%)
Age (years)				
60–65	80 (20)	103 (26)	183	46
65–70	57 (14)	23 (6)	80	20
70–75	24 (6)	40 (10)	64	16
75–80	19 (5)	23 (6)	42	11
80–85	10 (3)	13 (3)	23	6
85–90	03 (1)	3 (1)	6	2
Total	193 (48)	205 (52)	398	100
Number of illness	121 (50.6)	118 (49.37)	239	60
Single	67 (28)	56 (23.4)		
Double	33 (13.8)	33 (13.8)		
Triple	21 (8.8)	29 (12.1)		
Acceptability of ADC				
No	90 (22.61)	124 (31.16)	214	54.0
Yes	103 (25.88)	81 (20.35)	184	46.0
Ready to pay				
Not ready	90 (22.7)	155 (39)	245	61.5
Ready	103 (25.8)	50 (12.5)	153	38.5
Opinion regarding ADC				
Bad idea	50 (12.6)	71 (17.8)	121	30.0
Good idea	143 (36)	134 (33.6)	277	70.0

ADC: Adult Day Care Center

**Table 2: Distribution of age, gender, and cost of hospitalization with illnesses**

Characteristics	Hypertension n=90 (%)	Diabetes n=87 (%)	High cholesterol n=42 (%)	Other diseases n=51 (%)
Age				
60-70	49 (54.4)	54 (62.1)	27 (64.3)	15 (29.4)
71-80	30 (33.3)	26 (29.9)	12 (28.6)	29 (56.9)
81-90	10 (11.1)	7 (8)	2 (4.8)	07 (13.7)
>90	1 (1.1)	0	1 (2.4)	0
Gender				
Male	42 (47.7)	46 (52.9)	17 (40.5)	29 (56.9)
Female	48 (53.3)	41 (47.1)	25 (59.5)	22 (43.1)
Hospitalization cost (Rs.)				
0-5000	8 (8.8)	3 (3.4)	0	7 (13.7)
5000-10000	1 (1.1)	6 (6.9)	40 (95.2)	1 (2)
10000-30000	1 (1.1)	75 (86.2)	1 (2.4)	10 (19.6)
30000-100000	77 (85.6)	3 (3.4)	1 (2.4)	33 (64.7)
Above 100000	3 (3.4)	0	0	0
P value	0.033*	0.041*	0.024*	0.046*

\*P value&lt;0.05

operational deficit of Rs. 4695952140/-. This can be taken care by the state by proper budget allocation to meet this demand. In future, the percentage of the geriatric population is expected to grow only.

The authors found that the model of ADC could improve the perceived physical quality of life and psychological support among elderly. The social model of ADC is better for the survey area and the study population. The proposed model of ADC tends to improve the social and mental health of the participants as well as food and transportation facilities. According to the 60<sup>th</sup> round report of National Sample Survey Organisation, an estimated population of 1,13,377 elderlies are living alone or with their spouse only.<sup>[13]</sup> Taking into this consideration as well, a state policy can be developed

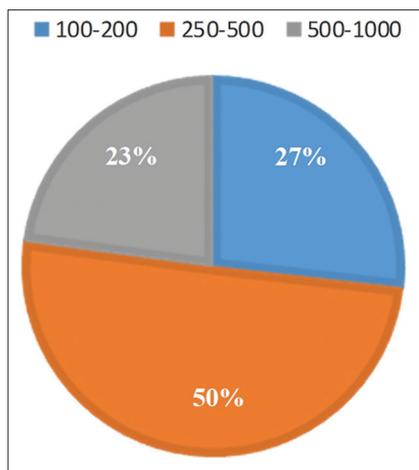
to provide ADC's for our elderly under the various social welfare schemes that would require a capital budget of Rs. 2486 crore with an additional Rs. 469 crore to cover the operational deficit.

To initiate, we can start an ADC in cities focusing on the parents of Non-residential Indians which can be under a tertiary care hospital. An effective ADC will be the one which provides an opportunity to the elderlies to mingle with the people of their age group along with their NRI children when they come to meet them during vacations if they want so. In such a setup they will get all the health-care facilities in a homely atmosphere.

The authors are aware of shortcomings of the present study which include study area being restricted to the Kanayannur Taluk only

**Table 3: Characteristics of population to which the Adult Day Care concept was acceptable (n=184)**

Characteristics	n		Percentage	
Marital status				
Married	179		97	
Unmarried	05		03	
Living with spouse				
No	27		15	
Yes	157		85	
<b>Age group</b>	<b>Females</b>	<b>Males</b>	<b>Females</b>	<b>Males</b>
60–65	38	43	21	23
65–70	39	12	21	6.5
70–75	13	15	7	8
75–80	6	9	3.2	5
80–85	6	2	3.2	1
85–90	1	0	0.5	0
Total	103	81	56	43.5
Retired-receiving pension				
No	111		60	
Yes	73		40	
Another source of income				
No	169		91.8	
Yes	15		8.2	
Domestic support				
No	96		52	
Yes	88		48	
Illness status				
Single illness	61		33.15	
Double illness	41		22.28	
Triple illness	24		13.04	
No illness	58		31.52	



**Figure 1:** Percentage of geriatric population willing to pay money in different ranges

and focusing only on the structured cost of ADC. However, further follow-up studies are needed for evaluation of the ADC program.

### CONCLUSION

The economic burden faced by elderly cannot be overlooked, and therefore authors strongly recommend setting up of ADC at

Kanayannur Taluk, Kerala, with further efforts to bring up similar centers throughout India.

### REFERENCES

- World Health Organization. Ageing and Health. World Health Organization; 2015. Available from: <http://www.who.int/mediacentre/factsheets/fs404/en/>. [Last cited on 2015 Jan 11].
- Mahajan AA, Ray A. The Indian elder: Factors affecting geriatric care in India. *Global J Med Public Health* 2013;2:1-5.
- Population Reference Bureau. Today's Research on Aging; 2012;25:1-6.
- GOI. National Policy on Older Persons (NPOP). Ministry of Social Justice and Empowerment, Government of India; 1999. Available from: <http://www.socialjustice.nic.in/writereaddata/UploadFile/National%20Policy%20for%20Older%20Persons%20Year%201999.pdf>. [Last accessed on 2017 Aug 25].
- GOI. National Programme for health Care of the Elderly. Ministry of Health and Family Welfare, Government of India: Operating Principles; 2011. Available from: [https://www.mohfw.gov.in/sites/default/files/8324324521Operational\\_Guidelines\\_NPHCE\\_final.pdf](https://www.mohfw.gov.in/sites/default/files/8324324521Operational_Guidelines_NPHCE_final.pdf). [Last accessed on 2017 Aug 25].
- O'Keeffe J, Siebenaler K. Adult Day Services: A Key Community Service for older Adults. U.S. Department of Health and Human Services. Executive Summary; 2006. Available from: <https://www.aspe.hhs.gov/basic-report/adult-day-services-key-community-service-older-adults>. [Last accessed on 2017 Aug 25].
- Smith A, Sim J, Scharf T, Phillipson C. Determinants of quality of life amongst older people in deprived neighbourhoods. *Ageing Soc* 2004;24:793-814.
- Villages and towns in Kanyannur Taluka of Ernakulam, Kerala; 2017. Available from: <http://www.census2011.co.in/data/subdistrict/5661-kanayannur-ernakulam-kerala.html>. [Last accessed on 2017 Aug 25].
- Design Guidelines for Queensland Residential Aged Care Facilities; 2017. Available from: [https://www.health.qld.gov.au/data/assets/pdf\\_file/0025/151099/qh-gdl-374-8.pdf](https://www.health.qld.gov.au/data/assets/pdf_file/0025/151099/qh-gdl-374-8.pdf). [Last accessed on 2017 Aug 25].
- Manual of Policies and Procedures Community Care Licensing Division Residential Care Facilities for the elderly (RCFE) Title 22 Division 6 Chapter 8; 2017. Available from: <http://www.cdss.ca.gov/ord/entres/getinfo/pdf/rcfeman1.pdf>. [Last accessed on 2017 Aug 25].
- Adult Day Care-Operating Costs of Adult Day Centers; 2007. Available from: <http://www.medicine.jrank.org/pages/25/Adult-Day-Care-Operating-costs-adult-day-centers.html>. [Last accessed on 2017 Aug 28].
- Bhan N, Madhira P, Muralidharan A, Kulkarni B, Murthy GV, Basu S, *et al.* Health needs, access to healthcare, and perceptions of ageing in an urbanizing community in India: A qualitative study. *BMC Geriatr* 2017;17:156.
- Elderly in India-Profile and Programmes 2016, Central Statistics Office Ministry of Statistics and Programme Implementation Government of India; 2016. Available from: [http://mospi.nic.in/sites/default/files/publication\\_reports/ElderlyinIndia\\_2016.pdf](http://mospi.nic.in/sites/default/files/publication_reports/ElderlyinIndia_2016.pdf). [Last accessed on 2017 Aug 30]

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